UNITED NATIONS
ECONOMIC AND SOCIAL COUNCIL

Distr.
LIMITED
E/ECA/NRD/NRU/Col/IW.4
June 1983
Original: ENGLISH

ECONOMIC COMMISSION FOR AFRICA

Regional workshop on the Role of Coal
in Accelerated African Economic Growth

Addis Ababa, Ethiopia, 11-15 July 1983

COAL IN ZIMBABWE
PAST, PRESENT AND FUTURE

ABSTRACT

Zimbabwe is a landlocked country with relatively well-established infrastructure serving established mining, agricultural and manufacturing industries. For such sophistication power and fuel are pre-requisites and Zimbabwe is blessed with ample coal reserves which to date have only been exploited at one colliery, Wankie.

Coal-bearing sediments are restricted to rocks of the Lower Karoo System of Permian age and the coals are of typical Gondwanaland-type. Sedimentation was controlled in fault-bounded basins related to the East African rift system. These are the mid-Zambezi and Sabi-Limpopo basins in the north and south of the country respectively. The areas are remote and generally underdeveloped.

Prospecting at the turn of the present century and through its first 50 years established the presence of coal at most of the localities from which the commodity is now known. However, the Wankie Coal Agreement, introduced by the British South Africa Company in 1901, gave that colliery what amounted to a monopoly for coal on the local market. The Coal Price Agreement, signed annually, guarantees a fair return on all capital employed by the Wankie Colliery Company. Government now has a controlling share holding in the colliery.

Revocation of the Wankie Coalfield Act in November 1979 and the gaining of Zimbabwe's Independence encouraged a renewed interest in the country's coal potential. This at present is at a low ebb due to the general world recession but it is hoped that there will be a revival once the results of the recent 'Coal Resources and Utilization pre-feasibility Study' of Zimbabwe's coals are assessed.

Of the 40 known coal localities in Zimbabwe, eight are sufficiently well known to be considered in the future. Wankie has an annual production

of up to 3 million tons of coal but the new power development programme will require that this production be doubled. Of the other well known coalfields four could be developed for mining once additional exploration has been completed.

In Zimbabwe 92,5 per cent of the known coal reserves are situated in the mid-Zambezi Basin whilst only 7,5 per cent occur in the south-east of the country. Total in situ reserves of 10 571 million tons are known with varying degrees of confidence. Of this figure 2 444 million tonnes are regarded as being accessible by opencast mining methods.

The new Z$128 million mining development scheme at Wankie is intended to exploit both steam and coking coal in an opencast, strip-mining operation. The expansion, made necessary by construction of stage one (480MW) of the new 1 680MW Hwange Power Station, has required erection of a Bucyrus Erie 1570W walking dragline with 75 cu. yd. bucket capacity and two B.E. 1950 coal shovels with 18 cu. yd. bucket capacities.

Traditionally mining of coal at Wankie has been carried out underground by labour intensive bord and pillar methods. Owing to the thick-seam mining conditions (up to 10 metres), only a small percentage of the total coal can be extracted for sales purposes.

Coal from Wankie is required to supply a host of local and regional markets which necessitates a complex washing and screening plant to produce a range of lump, nut, pea and duff-sized coals of the required quality. Special low-phosphorus coals are required by the ferro alloy industry but the largest internal market are the iron and steel works (ZISCO). Coke ovens exist at Wankie itself and at ZISCO in the Midlands. Daily liner trains are required for the latter whereas most of the Wankie coke production is for export to the copperbelts of Zambia and Zaire. By-products from the coking industry include tar and tar products, benzole, naphta and ammonia. Coke oven gas at ZISCO is used to fire the blast furnaces.

Zimbabwe is now faced with the future development and optimium utilization of her coal resources. Most coals are adequate for use in the raw state at pit-head power installations. Some deposits will provide sufficiently large tonnages, after washing, of low ash export quality coal but only the localities near Wankie and the Bendezi and Bubye coalfields in the south-east carry known reserves of blende coking coal.

Zimbabwe has a flourishing agricultural industry and has no supplies of indigenous oil. Fertilizer and liquid fuels represent her future needs and a decision must be made regarding the opening of a new coalfield to provide a suitable, long-lasting feedstock to a coal conversion plant. The choice of 'route' is important. Pyrolysis appears to be uneconomic whilst gasification for the synthesis of ammonia and production of syncrude oil via the Fischer Tropsch process is attractive but extremely expensive. Direct liquifaction of coal by hydrogenation appears the most economic route which would provide the correct product range but the process is not yet commecially tried. The decision is great.

A national energy policy is being formulated for Zimbabwe in the framework of which will be a coal utilization policy. Such a policy will require the co-operation of all interested parties in the coal sector. Basic research will be a necessity and may mean the establishment of a fuel research institute. For this, exploration and analytical techniques must be standardized so that all information can be stored in a national data bank. This will be used for planning and further determination of the coal reserves and resources of Zimbabwe. The coals should also be classified to allow for their characterization and rationalization so that they can be conserved for their best furture utilization.